CLAIMS:

1. Displacement device for producing a rotary movement with an output element which can be adjusted in angle by operating a drive element, and with a load torque lock which is mounted between the drive and the output element and which blocks through force-locking engagement torque introduced on the output side and transfers torque introduced on the drive side to the output element, more particularly for window winders or seat adjusters in vehicles, characterised in that between the drive element (2) and the load torque lock (1) and/or between the output element (3) and the load torque lock (1) there is a play compensating device (5) which compensates the torsion angle play between the drive element (2), the output element (3) and the load torque lock (1).

2. Displacement device according to claim 1 characterised in that the load torque lock (1) has at least two locking elements (4, 4') mounted in a cylindrical displacement housing (10), that clamping faces (43) of the locking elements (4, 4') adjoin the displacement housing (10) under the effect of the play compensating device (5), and that torque introduced on the output side intensifies the bearing contact of the locking elements (4, 4') against the displacement housing (10).

3. Displacement device according to claim 2 characteris d in that the play compensating device (5)

is mounted at least in part between opposing expanding faces (41) of the locking elements (4, 4') and presses the locking elements (4, 4') apart with such force that the clamping faces (43) of the locking elements (4, 4') adjoin the displacement housing (10) with predetermined pretension.

4. Displacement device according to claim 2 or 3 characterised in that the play compensating device (5) is guided in the drive element (2) and is connected to a spring (50) which pretensions the play compensating device (5) in the play compensating direction.

5. Displacement device according to at least one of the preceding claims characterised in that the locking elements (4, 4') are biased with a pretensioning force against the play compensating direction.

6. Displacement device according to at least one of the preceding claims, characterised in that the play compensating device consists of at least one wedge (5a) mounted between the expanding faces (41a) of the locking elements (4a, 4a'), with the wedge faces (51a) set opposite the expanding faces (41a) of the locking elements (4a, 4a') and guided displaceable with a wedge guide (52a) in positive locking engagement in a slide guide (20a) of the drive element (2a) and pretensioned radially by means of a spring (50a) so that the wedge faces (51a) adjoin the expanding faces (41a) free of play.

7. Displacement device according to claim 6 characterised in that the material matching of the expanding faces (41a) and the wedge faces (51a) on one side and the active faces of the wedge guide (52a) and slide guide (20a) of the drive element (2a) on the other side is such that in the absence of any drive torque the expanding faces (41a) can move the wedge (5a) against the action of the spring (50a) and that in the event of strain on the drive side the wedge (5a) is held in its position.

8. Displacement device according to claim 7 characterised in that the wedge angle α which the wedge faces (51a) include between themselves, the minimum friction angle $\sigma_{sperr,min}$ and the maximum friction angle $\sigma_{sperr,max}$ between the wedge faces (51a) and the expanding faces (41a) as well as the minimum friction angle $\sigma_{antr,min}$ between the wedge guide (52a) and the slide guide (20a) meet the following conditions

$$2 * \sigma_{sperr,max} < \alpha$$

$$\sigma_{antr,min} + \sigma_{sperr,min} > \alpha/2$$

in which σ = arc tan μ and μ is the friction value between the friction faces formed from the surface pairings wedge/ expanding face and wedge guide/ slide guide.

9. Displacement device according to claim 8 characterised in that the wedge guide (52b) is arranged radially off-set from the expanding faces (41b) of the locking elements (4b, 4b').

10. Displacement device according to at least one of the preceding claims 6 to 9 characterised in that the expanding faces (41c) of the locking elements (4c, 4c') or the wedge faces (51c) are formed ball-shaped.

11. Displacement device according to at least one of the preceding claims 1 to 5 characterised in that the play compensating device consists of at least one cylindrical shaped roller or ball (5d) mounted between the expanding faces (41d) of the locking elements (4d, 4d'), with the roller or ball guide (52d) mounted in a slide guide (20d) of the drive element (2d) and its outer surface adjoining with linear or spot contact free of play against the flat or ball-shaped expanding faces (41d) of the locking elements (4d, 4d').

12. Displacement device according to at least one of the preceding claims 1 to 5 characterised in that the play compensating device consists of at least one eccentric (5e) mounted rotatable between the expanding faces (41e) of the locking elements (4e, 4e') and formed as a stepped bolt mounted with an eccentric pin (52e) in a bore (20e) of the drive element (2e) and pretensioned radially by a torsion spring so that the eccentric faces (51e) adjoin the expanding faces (41e) of the locking elements (4e, 4e') without play.

13. Displacement device according to claim 12 characterised in that through the shaping and/or surface quality the eccentric faces (51e) adjoin the

expanding faces (41e) of the locking elements (4e, 4e') and the eccentric pin (52e) is connected with the drive element (2e) so that when the drive element (2e) is operated the eccentric (5e) is blocked and does not impede the movement of the locking elements (4e, 4e').

14. Displacement device according to at least one of the preceding claims, characterised by two pairs of locking elements (4f to 4i) mounted in superposed planes in the axial direction of the load torque lock (1f to 1i) of a displacement device for both rotary directions of the displacement device, and by one drive element formed as a follower disc (2f to 2i) having radial preferably diametrically opposing slits (20f to 20i) for holding the play compensating device (5f to 5i; 7f to 7; 81f, 82f; 81h, 82h; 81i, 82i).

15. Displacement device according to claim 14 characterised in that the play compensating device has two wedges (5g, 5g') arranged in slide guides (20g, 20g') of the follower disc (2g) and in recesses (44g, 44g', 44g'', 44g''') of the locking elements (4g, 4g'), wherein the wedge guides (52g, 52g') of the wedges are mounted in the slide guides (20g, 20g') of the follower disc (2g) and the wedge faces (51g, 51g') on each side adjoin wedge-shaped stop faces of the recesses (44g, 44g', 44g'', 44g''') of the superposed pairs of locking elements (4g, 4g', 4g'', 4g''') and in the event of radial displacement in the slide guides (20g, 20g') of the follower disc (2g) exert a force acting circumferentially on the locking elements (4g, 4g', 4g'', 4g''').

16. Displacement device according to claim 15 characterised in that stop faces (41g, 41g', 41g'',

41g''') on the output side of the locking elements (4g, 4g', 4g'', 4g''') of one plane press against locking element springs (6g, 6g') which couple the locking elements (4g, 4g', 4g'', 4g''') of one plane with the output element (3g).

17. Displacement device according to claim 14 characterised in that the play compensating device consists of wedges (5f, 5h, 5i) mounted radially displaceable on the follower disc (2f, 2h, 2i) and of scissor arms (81f, 82f; 81h, 82h; 81i, 82i) mounted rotatable about the output axis (30) and spread apart by the wedge faces (51f, 51h, 51i) of the wedges (5f, 5h, 5i) to adjoin by their radial stops adjoining the displacement housing (10) the stops (46f) on the expanding faces of the locking elements (4f, 4h, 4i).

18. Displacement device according to claim 17 characterised in that the angle between the contact bearing faces of the scissor arms (81f, 82f; 81h, 82h; 81i, 82i) and the centre axis of the wedges (5f, 5h, 5i) create a self-locking action between the wedges (5f, 5h, 5i) and the follower disc (2f, 2h, 2i).

19. Displacement device according to claim 17 or 18 characterised in that the angle including the wedge faces (51f, 51h, 51i) of the wedges (5f, 5h, 5i) and the surface quality of the wedge faces (51f, 51h, 51i) and the bearing faces of the scissor arms (81f, 82f; 81h, 82h; 81i, 82i) create no self-locking action between the wedges (5f, 5h, 5i) and the scissor arms (81f, 82f; 81h, 82h; 81i, 82i).

20. Displacement device according to at least one of the preceding claims 14 to 19 characterised by a radial

surface quality of the wedge guide (52f to 52i) of the wedges (5f to 5i) and/or of the slide guides of the follower disc (2f to 2i) which (surface quality) assists in the self-locking action.

21. Displacement device according to at least one of the preceding claims 17 to 20 characterised in that the contact bearing faces of the scissor arms (81f, 82f; 81h, 82h; 81i, 82i) are formed convex at least in part and adjoin flat or convex wedge faces (51f, 51h, 51i).

22. Displacement device according to at least one of the preceding claims 14 to 21 characterised by spring elements (7f to 7i) moving the wedges (5f to 5i) in the direction of the output axis (30).

23. Displacement device according to claim 22 characterised in that the spring elements are formed from compression springs (7f to 7i) which are mounted between the displacement housing (10) and the end faces of the wedges (5f to 5i) facing the displacement housing (10).

24. Displacement device according to claim 22 characterised in that the spring elements are yoke or formed springs (7i) which engage with angled ends (71i, 72i) in recesses (55i, 55i') at the end faces of diametrically opposing wedges (5i, 5i') opposite the displacement housing (10).

25. Displacement device according to claim 22 characterised in that the spring elements consist of wire springs (7h, 7h'; 7k, 7k'; 7l, 7l') whose ends are supported in recesses (54h, 54h') of the wedge faces

(51h, 51h') or on fastenings of the wedges (5k, 5k'; 5l, 5l').

26. Displacement device according to at least one of the preceding claims 1 to 13 characterised by a rod-like drive element (2m, 2n), a hollow cylindrical output element (3m, 3n) enclosing the rod-like drive element (2m, 2n), two pairs of locking elements (4m, 4m'; 4n, 4n') in superposed planes of the load torque lock (1m, 1n) mounted between the output element (3m, 3n) and the displacement housing (10) in each plane, spring elements (6m, 6n) mounted between expanding faces (41m, 41m'; 41n, 41n') of the locking elements (4m, 4m'; 4n, 4n') in each plane and bringing the clamping faces (43m, 43m'; 43n, 43n') of the locking elements (4m, 4m'; 4n, 4n') both to bear against the displacement housing (10) and also through rotation of the locking elements (4m, 4m'; 4n, 4n') in the displacement housing (10) to bear against contact bearing points (A, B) of the output element (3m, 3n), a wedge (5m, 5n) whose wedge faces (51m, 51m'; 51n, 51n') adjoin the expanding faces (41m, 41m'; 41n, 41n') of the locking elements (4m, 4m'; 4n, 4n') which are opposite the expanding faces (41m, 41m'; 41n, 41n') adjoined by the locking element springs (6m, 6n) wherein the wedge (5m, 5n) has a bore or recess in which the drive element (2m, 2n) is pushed, and a spring (7m, 7n) pretensioning the wedge (5m, 5n) against the expanding faces (41m, 41m'; 41n, 41n') of the locking elements (4m, 4m'; 4n, 4n').

27. Displacement device according to claim 26 characterised in that the wedge faces (51m, 51m'; 51n, 51n') by selecting the wedge angle, the spring constant of the spring (7m, 7n) and/or the friction index

between the expanding faces (41m, 41m'; 41n, 41n') of the locking elements (4m, 4m'; 4n, 4n') and of the wedge (7m, 7n), adjoin the expanding faces (41m, 41m'; 41n, 41n') of the locking elements (4m, 4m'; 4n, 4n') so that there is no self-locking action between the locking elements (4m, 4m'; 4n, 4n') and the wedge (7m, 7n).

28. Displacement device according to at least one of the preceding claims characterised in that the drive element (2) has claws which with torque on the drive side after lifting the friction locking contact of the locking elements (4, 4') against the displacement housing (10) engage with positive locking connection into recesses of the output element and entrain this in the drive direction.

29. Displacement device according to at least one of the preceding claims 1 to 28 characterised in that the drive element (2) has recesses which in the event of torque on the drive side after lifting the friction-locking contact of the locking elements (4, 4') against the displacement housing (10) adjoin with keyed connection against the claws of the output element and entrain this in the drive direction.